

# Notice of Allowability

Application No.

10/709,361

Examiner

Toan M. Le

Applicant(s)

FOREMAN ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/24/06.
2. ☒ The allowed claim(s) is/are 3-8, 11, 13-22, 25 and 27.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

**DETAILED ACTION***Allowable Subject Matter*

Claims 3-8, 11, 13-22, 25, and 27 are allowed.

Claims 3-8, 11, 13-22, 25, and 27 are allowable over the prior art of record, none of the prior art whether together singularly or in combination to teach the claimed combination as recited. The closest reference "A General Probabilistic Framework for Worst Case Timing Analysis" by Orshansky et al. do not disclose or suggest the improvement of the instant application comprises canceling delay contributions of grouped elements having correlated delay function, summing delay contributions of ungrouped elements in the early/late path, calculating a delay difference between the early path and late path by using the summed delay contributions of the ungrouped elements in the early/late paths, and subtracting the delay difference from the initial timing slack, wherein the summing comprises root sum squaring and root sum square difference as in claims 3-5; calculating metal layer delays for the early and late paths, summing like metal layer delay contributions in the early/late paths, calculating a metal layer delay difference between the metal layer delay contributions for the early path and late path; and subtracting the metal layer delay difference from the initial timing slack, wherein the summing comprises root sum squaring and root sum square difference as in claims 6-8; computing a variation in a difference in delays of the one or more pairs of elements by using the location-based delay characteristics and subtracting the variation from an initial timing slack as in claim 11; sorting the delay contributions into groups with similar delay contributions including groups of correlated delay contributions and groups with dissimilar delay contributions, canceling the delay contributions of the groups with similar delay contributions, and comparing the delay

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contributions of the groups with dissimilar delay contributions with an initial timing slack calculated for the set of racing paths, wherein the delay contributions comprise cell-based/wire-dependent and cell-based and wire-dependent delay contributions of the existing/newly-designed integrated circuit including performing a static timing analysis to identify a failing test of the static timing analysis in order to use a set of racing paths of the failing test as in claims 13-22; adding the variation of unpaired elements to the slack as in claim 25; and identifying one or more failing tests of the static timing analysis on the integrated circuit and using an early path/late path of one or more failing tests as the early path/late path of the timing tests as in claim 27 instead Orshansky et al. teach probability density function/distribution of path delays for worst case timing analysis using statistical timing analysis for finding the distribution of the maximum of circuit path delays with arbitrary covariance structure.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan M. Le whose telephone number is (571) 272-2276. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:30 P.M..

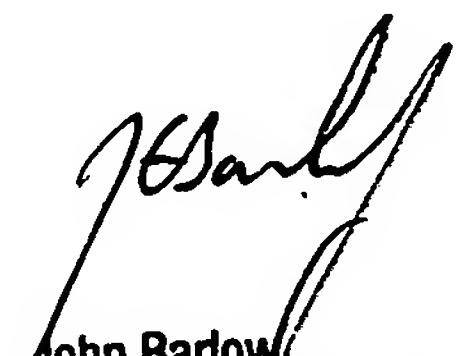
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Toan Le

April 5, 2006

  
John Barlow  
Supervisory Patent Examiner  
Technology Center 2800